

Ooey Gooey: Graphical User Interfaces are Here to Stay

By Claudia Lynch, *Benchmarks* Editor (BITNET: AS04@UNTVM1)

To extend the metaphor of the headline above, one could say "we're stuck with Graphical User Interfaces (GUIs)." Some people would agree with the slightly negative connotation of that statement, but many others see GUIs (pronounced gooey) as the answer to their prayers. What's all the controversy about?

What is a GUI?

GUIs are, basically, a mental model of data and tasks and a navigation schema for moving around that model. They are *operating environments*, not operating systems. They make requests of the underlying operating system software rather than issue commands directly to system hardware.

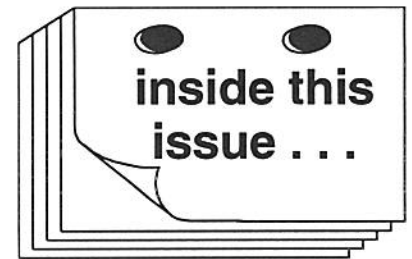
GUIs are usually made up of three primary components:

- ① A windowing system — a set of programming tools and commands used to build the windows. Examples: Microsoft Windows (DOS — see related articles on pages 4 & 6), the X Window system (UNIX — see related articles on pages 8 & 18).
- ② An imaging model — defines font and graphics creation on screen. Examples: Display Postscript (NeXt), QuickDraw (Macintosh).
- ③ An applications programming interface (API) — a set of programming-language function calls used to specify which windows, menus, scroll bars and icons will appear on the screen.

The Apple Macintosh defined the parts that have come to be associated with GUI.¹ GUIs don't have to have all of these features, but they usually have most of them:

- a pointing device, typically a mouse.
- on-screen menus that can appear or disappear under pointing-device control.
- windows that graphically display what the computer is doing.
- icons that represent files, directories, etc.
- dialog boxes, buttons, sliders, check boxes, and a plethora of other graphical widgets that let you tell the computer what to do and how to do it.

¹ "A Guide to GUIs," by Frank Hayes and Nick Baran, *BYTE* (July 1989, pp. 250-257).



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Continued from page 1.

There are basically seven choices in GUIs available now: Multifinder for Apple Macintosh, Microsoft Windows for DOS, Presentation Manager for OS/2, Intuition for the Amiga, NeXTstep for the NeXT, and Motif or Open Look for the X Window system (UNIX).

What's so Great About GUIs?

GUIs provide a transparent layer between computer users, their applications, and the underlying operating system so that applications have consistent command structures. This means they're intuitively easy to learn and use.

According to an article in *Computer Weekly*, GUIs increase productivity and reduce training costs. GUI users complete 58 percent more tasks correctly than those using Character User Interfaces (CUIs — "command line" computing).

Proponents say that GUIs make software and computer use more viable for users who would not otherwise want to suffer through the learning process. GUIs can also provide for consistency across applications and platforms. One of the big learning curves in computing involves the "how-tos" of various applications and operating systems. If you know how to manipulate GUI components (moving windows, changing icons, using scrollbars), the platform you're using — Macintosh, Microsoft Windows, Presentation Manager — doesn't matter so much.

What's not so Great About GUIs?

According to some people, GUIs are **not** intuitively easy to learn and use. Many people who have years of experience using CUIs are put off by what they consider to be extra steps involved

with scrolling through menu bars and clicking on icons. These people see GUIs as cumbersome and counterproductive. To quote an ACS staff member: "There is an inherent conflict between a graphical interface and the traditional 'typewriter' keyboard. The keyboard and pointing device are locked in a never ending struggle for the hand's attention."²

GUIs (particularly Microsoft Windows) are also perceived as being "buggy" — crashing unexpectedly and often.

Conclusion

Despite their critics, GUIs are here to stay. One big factor in predicting the success of a product is its place in the marketplace. The user-base for GUIs is increasing dramatically, especially for Microsoft Windows in the DOS arena. This means, of course, that there will be more customers out there demanding more applications. The magazine *Windows Watcher* published the following statistics in September 1991:³

- Microsoft Windows 3.0 units shipped: 5,000,000
- Macintosh GUI shipped: 5,000,000
- OS/2 units shipped: 650,000
- Number of U.S. articles written about Microsoft Windows in 1990 and 1991: 33,756
- Percentage increase in sales of Windows applications 2nd Quarter 1991 over 1990: 209%
- Percentage decrease in DOS applications (the first decrease ever): 2.1%

²Dr. Philip Baczewski, upon proof-reading this article for the first time.

³"Windows by the numbers" *Windows Watcher* (Sept. 1991 v1 n11 p.4).

Also, the Department of Defense (DOD) announced the adoption of the X Window system as a standard in the fall of 1991. When the government adopts a standard, people usually pay attention.

Another important factor in favor of GUIs is the benefits they bring to the individual computer user. Although there are those that disagree, the consensus seems to be leaning toward GUIs (in one form or another) as the interfaces of the future.

J.D. Hildebrand⁴ surveyed a trio of interface-design experts to find out their views of GUIs. David Bulman, President of Pragmatics Inc. — a consulting firm specializing in structured methods, object-oriented development techniques, and human factors in engineering — stated that 'the GUI promise is easier use and learning. It seems to me that 80% or more of the possible benefits have been achieved.' Bulman suggests that a user interface should be able to pass "the 10-minute test." If a typical user can't figure out how to use the program in 10 minutes, then, in general, the interface isn't good enough.

Aaron Marcus — principal and founder of Aaron Marcus and Associates, a computer graphics consulting firm specializing in computer-based visual communications planning, research, design, documentation, evaluation, and training — was also surveyed by Hildebrand. Marcus believes that the current generation of GUIs is a first step toward the adaptable, customizable interfaces of the future. 'MITI is a six-year, \$150 million user-interface research project being conducted in Japan. Two years into the project, they've concluded that data must reclothe itself to match the user's expectations and needs. A new kind of software-metaware will be necessary to let users manipulate metaphors and translate

⁴"Menus, mice & mom" by J.D. Hildebrand, *Computer Language* (Sept. 1991 v8 n9).

among them until they've found a view that makes data meaningful and satisfying. You can't do that with today's GUIs.'

Bill Joy, Vice President of Research and Development at Sun Microsystems, sums up the direction computing systems are evolving, led — in part — by GUIs. 'In the 21st century, it will no longer be sufficient to put computers into environments. They must be part of the environment.'⁵

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⁵"The best in client/server computing!" *Datamation* (Oct. 1 1991 v37 n19).■

Opening Doors With Windows

By Eric Lipscomb, ACS General Access Lab Manager (BITNET: LIPS@UNIVAX)

Like it or not, Windows has arrived in the PC world and has possibly changed the way we DOS users look at computing from now on. How big of an impact is it making? This article was written using WordPerfect for Windows. *Benchmarks* is published using Xerox Ventura Publisher for Windows. Countless other DOS-based applications are being rewritten to operate under Windows (Lotus 1-2-3, Microsoft Word, Quicken, and Turbo Pascal to name a few). More and more computers sold at major retailers offer an installation of Windows as one of the "extras" to make the deal more appealing. There's no doubt that Windows is one of the hottest-selling software packages today, but why? What makes this program so popular? And will it continue to grow to the point that it becomes a standard by which other programs are compared?

Windows — What it is

Windows belongs to a class of software called Graphical User Interface, or GUI (pronounced "gooey") for short. In stark contrast to good old command-line DOS, Windows offers an iconized, point-and-click way to run computer programs. In some respects, it is similar to the graphical operating system popularized by Apple on the Macintosh computer: there are "windows" that open up on the monitor which have icons representing different applications, there is an arrow cursor which is controlled by a mouse that can be used to run applications, move or resize windows, or activate the pull-down menu that adorns the top of the window.

There are also many things that Windows is not. It is not, for example, an operating system replacement. It is called from the DOS command line and returns to the DOS command line when execution ends. Native Windows does not have file handling provisions like the Macintosh. Files are not seen as icons in the windows; different directories do not "pop up" as new windows for the user to peruse the file section.

Windows is also not the world's most stable program. Many Windows users suffer from "Unrecoverable Application Errors," called "UAEs" by Microsoft, that pop up unexpectedly and oftentimes hang the system beyond recovery. Sometimes DOS applications don't function well under Windows. And Windows also tends to have "border disputes" with some memory management software.

Windows is, essentially, a graphical program launcher. It helps to alleviate some of the fears that novice computer users feel when greeted with the cold DOS prompt. Is it the next step in the evolutionary process of the Intel-based microcomputer operating system? Maybe, maybe not.

Windows — What it does

After installing Windows the first time, users tend to have an "Oooh! Ahhh!" reaction to the colorful screen display, the mouse arrow and hourglass, and all the icons they can click on to run some sort of program. Nine out of ten times, the first application run is Solitaire, which Microsoft, only half jokingly, claims is the most-used Windows application. And with good reason. Windows Solitaire is a well-written application. I've been using Windows for over a year now and still sometimes catch myself in a two or three hour solitaire marathon [not during working hours, of course!].

Fortunately, Microsoft and other software vendors have written other applications for the Windows platform. These Windows applications are able to take full advantage of the features Windows has to offer: multitasking (in 386 enhanced mode), cut and paste between applications, full use of all memory in the computer (something DOS users have been wanting since day one), just to name a few.

Windows can also run DOS applications, to an extent. It is possible to run DOS programs in a window (again, only in 386 enhanced mode), but care must be taken when doing so. DOS programs tend to be picky about memory requirements and memory usage. Even though Windows offers ways to "work around" the finicky nature of DOS, sometimes it just can't handle the DOS programs.

Windows modes of operation

Windows can operate in one of three modes: 386 enhanced, standard, and real. In real mode, Windows runs just like a DOS application, bound to the 640K DOS memory limit and the real mode operation of the CPU. Applications run under Windows in this mode do not have much functionality as they cannot access any extended or expanded memory on the computer, and some Windows applications like WordPerfect and the Adobe Typeface Manager simply will not run in real mode. An XT class computer can only operate Windows in real mode.

Standard mode is the default operating mode for 286 processors, as it runs the CPU in protected mode, allowing Windows to access all memory as one large block. In this mode, Windows handles multiple applications by "process swapping." That is, when an application is loaded or reloaded, all other applications are swapped to memory or disk, depending on the memory size of the application. When an application has been swapped out, no processing occurs for that application until it is reloaded. In other words, Windows

can have several applications open but can only process one at a time.

386 enhanced mode is the default mode for 386 and 486 processors, though these processors can also run Windows in any of the other modes. Enhanced mode takes advantage of some of the features of the 386 CPU, allowing limited multitasking to be performed. Unlike process swapping in standard mode, multitasking in enhanced mode gives CPU priority to the active application, but all other loaded applications continue to get CPU time on a much lower scale. While Windows applications fare best from the multitasking capabilities of enhanced mode, DOS applications can still benefit, though not to the same degree.

There are no strict rules about the operating speed of Windows based on hardware and mode of operation. Contrary to initial belief, a 286 with 4 Megabytes of memory will operate faster in standard mode than a 386 or 486 with 2 Megabytes of memory in 386 enhanced mode.

Windows — What it means to you

So why switch over from the tried, tested, and comfortable use of DOS applications into the new and sometimes treacherous world of Windows? There's no doubt that Apple Computers revolutionized the way the world looked at computers with the introduction of the Macintosh and its user-friendly graphical interface. Almost all other computer platforms have made a move into the graphical user interface field since then, like Steve Jobs and NeXT Step for the NeXT workstation, DEC Windows on Digital Equipment's VAX and Ultrix computers, the X Window System for many UNIX platforms, and several attempts at a GUI for DOS. Many individuals believe that the graphical user interface will become the user interface standard in the years (months?) to come.

Personally, I'm a newcomer to the GUI world. I'm from a die-hard "command line interface or death" background. I used to refer to users of GUIs as WIMPs (Window Icon Mouse People) because I didn't believe that type of interface could be powerful. I'm definitely a believer now. What little exposure I've had with X, the Macintosh, and Windows has shown me just how much *more* power can be had with a standard interface for many applications.

Windows is the first solid windowing interface for the PC, and Microsoft went through 3 versions before finally getting a product that was even comparable to other GUIs. And Windows has not reached its final stage of evolution yet. It is still a newcomer in the market and will fall on its face a few more times before it really becomes a mainstay. But the product does have the support of the marketplace, which can be judged most readily by the number of vendors who are now developing applications to operate on the Windows platform.

Windows — What will the future bring?

The future is uncertain for Windows. Though Microsoft has opened the doors and proven that a GUI is a reasonable product for a PC, Windows itself may be too little too late. IBM has been working diligently on OS/2 2.0 for quite a while, but now claims that the operating system will run DOS programs better than DOS and Windows programs better than Windows. Microsoft itself has told the world that it is not certain about the Windows product by its development of Windows/NT, a product based on the Windows environment that will be more like an operating system and will answer to some of the major shortcomings of Windows 3.0, namely PC networking.

However, software developers continue to develop Windows programs despite this news. Consumers continue

to purchase Windows and Windows applications for their computers.

The real question regarding the future of Windows is not really based on the future of the program but the future of the Intel-based microcomputer itself. The current trend towards high-powered workstations for individual users is beginning to lean into the UNIX market. The chances of the high-powered UNIX workstation replacing the DOS computer on the desktop are becoming greater and greater. The limitations of DOS and the Intel architecture will continue to pose problems for computer users for quite some time if the release of DOS 5.0 is any indication of the direction of operating systems for PCs. Windows has certainly thrown a wrench into the works. Only time will tell how much the impact of Windows will alter the PC market. ■

WordPerfect for Windows is Here

By Claudia Lynch, *Benchmarks* Editor
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Although it is not on the Supported Computing Items List (SCIL), WordPerfect for Windows is available to campus departments as part of the site license agreement between WP Corp. and UNT. If you have an existing site license copy of WP DOS, are a Microsoft Windows user, and want to upgrade to the Windows product, you can do so for \$10. A new site license costs \$32 and the manual is \$27. All of these products are available from Network & Microcomputer Support, ISB 224 (565-2316).

Since neither MS Windows nor WP for Windows are officially supported, the staff of Network & Microcomputer Support can only provide a very limited amount of help on them. It is suggested that most questions about WP for Windows be directed to WP Corp. at the phone numbers in the box to the right. ■

A PC With a View:

First Impressions of Living with Windows

By Dr. Philip Baczewski, Acting Director of Academic Computing (BITNET: AC12@UNTVM1)

A former ACS staff member once declared "The Macintosh is Dead — Windows 3.0 is going to take over the market." Personally, I'd always liked the Macintosh and probably would have purchased one if it hadn't had that tiny little black and white screen when it first came out. So, recently in anticipation of a wave of Windows commotion sweeping the campus, I decided to bite the bullet and go graphical. After all, I had just upgraded to DOS 5; I have a 16mhz 386SX system on the desk; I've got a VGA monitor; I've got all I need to bring up my own Mac-beater PC, right? (Well, I guess that's what Microsoft would like you to believe.)

At home, I have an Amiga which, for all of its faults, has the virtue of being the first true multitasking microcomputer to hit the market (Macs can multitask *now* with Multifinder, but it wasn't always so). At the office I had been surviving in the DOS environment by utilizing some functions of the Word Perfect Office (WPO) shell menu system. It allowed me to have several applications loaded at once and to switch between them. I could even cut and paste between programs using a facility of the WPO shell. This was a fairly productive computing environment (for DOS) but it lacked a crucial element: multitasking. With task switching, I could at least move between applications with some ease (after all, you could spend half a lifetime just waiting for WordPerfect to load and unload), but once I switched to a new application, the one I left would sit there languishing unproductive until I returned to it. Multitasking would allow actual work to be done in the background while my attention was with a different program (bring on those file transfers!).

Running Windows

The installation went smoothly. With much help from another ACS staff member, I was finally staring at the Windows Program Manager screen. I had been initiated into the Windows cadre, and I too now had access to that most frequently run Windows application: *Solitaire*! Pretty soon, I was editing PIF files, configuring all of my usual DOS applications to run in their own windows, and, of course,

WordPerfect Corporation Toll-free Customer Support Numbers

- ❑ **Installation:** (800) 228-6076
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- ❑ **Networks:** (800) 228-6066

positioning all of those icons in aesthetically pleasing patterns. After the initial glow wore off, however, I found out that my Windows had a few cracks. The performance of my system was less than adequate (actually, I have to admit that "pukey" was the technical term that I used to describe it). There were unexplained delays in updating the screen, long pauses before keystrokes or mouse button clicks seemed to register, and general sluggishness in the performance of my various application programs.

In desperation, I began running Windows in Standard mode rather than 386 enhanced mode. I could switch between applications but the process of switching was longer than when I was running the WPO shell. I now also lost any ability to cut and paste between applications and my DOS applications would no longer multitask. However, in my dedication to staying on that cutting edge of PC technology I stuck with Windows, every once in a while trying enhanced mode again and testing a new theory for its slowness, still to no avail. Other people were running Windows on their 386/SX systems and not threatening to go back to a responsive operating system like CPM. Why was my machine so affected?

The answer came with a mail message I received from another ACS staff member. It said something to the effect of "please test the attached new version of the packet driver and let me know if there are any problems." (A packet driver is a software interface that, among other things, allows those on Novell networks to use certain IP networking applications, like CUTCP.) I had suspected the Novell network in my performance problems all along, but with the new packet driver, part of my suspicions were confirmed. It had not actually been the network itself that was the culprit, but my machine's communication with the network. Once I was using the newer version of the packet driver, I could run in 386 en-

hanced mode and my system's performance was greatly improved (once again, in technical terms that's "better than pukey"). (For those who are interested, I went from using Russ Nelson's Crynwr Software packet driver version 7.2.1 to version 10.2.2.)

WordPerfect for Windows

With my system's performance problems "solved," I could get back to my original goal of developing the most productive PC working environment possible. Towards this end, I embraced WordPerfect for Windows as my word processor (of course, keeping the DOS 5.1 version available for "emergencies"). I quickly learned that WordPerfect for Windows is a formidable opponent if you are only initiated into the DOS version. Out of the box, the function keys are totally different than those for the DOS version, but, you can configure WP for Windows to use the same function key setup, with a few exceptions. One of those exceptions, however, is the <F1> key, which to my well-trained fingers still means "Cancel" or undelete. In the WP/Win brave new world, this keystroke brings up the "help" window, a bit of an arduous process in itself. This negative reinforcement has almost broken my fingers of reaching for that <F1> key.

Once my retraining process progressed, I found WordPerfect for Windows to be a potentially very powerful program (with the exception of the Speller, which is apparently some type of study in slow motion computing). I also found, however, that all of the performance problems were not "solved." WordPerfect for Windows is a resource hog, even when it is pushed to the background. With it loaded, when I switched to other applications, previously zippy programs behaved as if they were running on an original IBM PC or something slower. This is especially true for those DOS programs which are running in their own window. Even minimizing the WP window, which is supposed to suspend all processing for that window, did not seem to improve things all that much. In this case, I think I am running up against the limitations of a 16mhz processor. It is a fact of computing life that the more applications you have running on one CPU, the "harder" your processor needs to work.

The Bottom Line

The bottom line is that perhaps Windows is not the panacea that some people would like you to believe it is. If you are primarily interested in running one application at a time for the sake of the windowing environment, then Windows 3.0 may be a solution for you. If you are interested in taking advantage of a multitasking computing environment, then you need to seriously evaluate whether your current hardware (both CPU and display technology) is up to the job. In either case, configuring this environment to use the productivity tools that you may now be using under DOS is no trivial matter. Creating a productive Windows system goes far beyond plugging in the install disk and running the set-up program, and the task gets more complex when you factor in a local area network. While I probably need to do some "tuning" on my own installation of Windows in order to try to maximize its efficiency, my experience to date still leaves one question in my mind: I wonder how OS/2 would run on a 16mhz 386SX? ■

The X Window System Defined; its Future at UNT

By Billy Barron, VAX/UNIX System Manager (BITNET: BILLY@UNTVMX) and Marc St.-Gil, UNIX Systems Programmer (Internet: mstgil@sol.acs.unt.edu)

The X Window System (often abbreviated X) is a network based GUI system that is very popular on both UNIX and VMS platforms. It follows a client server architecture for the processing of information. However, under X these terms appear to have reversed their meaning. The client is an application running on a remote computer. The server is the user's X terminal or workstation which services the client application's display requests. A display request is something like asking the server to open a window for the client.

However, not all X Window Systems are the same. For example, there are many different window managers for X. A window manager controls the way the screen appears to the user by conforming to a "look and feel" standard. The two most popular standards are Motif and OpenLook. Sun machines ship with an OpenLook conformant GUI called OpenWindows. DEC, IBM, and HP support Motif standard window managers. A few, such as Solbourne, support both standards. On our campus, you will also find Solbourne Window Manager (SWM) (see page 18 for a description of X on the Solbourne here at UNT), which is very powerful and is capable of conforming to either standard, and the free Tom's Window Manager (TWM) which is not conformant to any standard.

X is available on most of the UNIX platforms around campus including the Solbourne. In addition, it is available on the VAX where it is called DECwindows.

Please see X on page 10.

The Network Connection

By Dr. Philip Baczewski, Acting Director of Academic Computing, BITNET INFOREP (BITNET: AC12@UNTVM1)

*This column is a continuing feature of **Benchmarks** intended to present news and information on various aspects of wide area networks.*

Talk About GUIs

With all of the talk about Graphical User Interfaces (that's GUIs to you and me), you might be wondering where you can find more information or ask specific questions about using a particular computer or operating system. Network mailing lists and news groups are, as always, an excellent source of information, both technical and user-oriented. There are several BITNET LISTSERV mailing lists which deal with GUIs. There is also a great deal of information contained amongst the news group hierarchies if you just know where to look. Where you look, however, will depend on the type of GUI or windowing system that interests you.

Among the BITNET LISTSERV groups which apply to this topic are two which are related to Microsoft Windows. WIN3-L@UICVM is a discussion group devoted to general issues related to Microsoft Windows version 3. (See the *List of the Month*, which accompanies this column for more information on this mailing list.) Also related is a more recent addition, WPWIN-L@UBVM. As its name implies, the list's topic is the recently released WordPerfect for Windows product. Both of these mailing lists can be read as news groups by using ANUNews on the VAX or nn on the Solbourne. Another source of information on GUIs is those lists which discuss computer systems which use a GUI as their primary user interface. These include the Amiga (I-AMIGA@UTARLVM1), the Macintosh (INFO-MAC@RICEVM1), the NeXT (NEXT-L@BROWNVN), etc.

If you explore the news group hierarchy, there are a number of sources of information. The most obvious place to look might be the comp.windows hierarchy:

- comp.windows.misc
- comp.windows.ms (Microsoft Windows groups)
- comp.windows.ms.programmer
- comp.windows.news
- comp.windows.open-look (the open-look X window standard)
- comp.windows.x (X window groups)
- comp.windows.x.announce
- comp.windows.x.motif
- comp.windows.x.pex

There is a hierarchy for discussion of the OS/2 operating system:

- comp.os.os2.apps
- comp.os.os2.misc

Please see Groups on page 10.

List of the Month

Each month we will highlight one BITNET, Internet, or USENET Special Interest Group (SIG) mailing list. This month's list...

This month's list is actually three for the price of one. Below are discussion lists on three topics related to GUIs. The Microsoft Windows and X window systems are environments which support a GUI, while OS/2 is an operating system with a integrated windowing environment. WIN3-L is available for reading as a news group on VAX ANUnews or Solbourne nn in the bit.listserv hierarchy.

WIN3-L on LISTSERV@UICVM (WIN3-L@UICVM) — Microsoft Windows Discussion List

Owner: Tom Cervenka (BITNET: CTCT100@UICVM; Internet: ctct100@uicvmc.aiss.uiuc.edu) Internet address of LISTSERV: listserv@uicvm.uiuc.edu

The WIN3-L list is a forum for discussion about Microsoft Windows and related issues. It is intended for those who are just starting to use Windows as well as the veterans of the program. Subscribers are encouraged to seek help for problems, share tips and to discuss the good and bad experiences that they have with Windows. Technical support persons are invited to exchange ideas about how they help others learn to use Windows.

To subscribe to WIN3-L, send the following command to LISTSERV@UICVM via mail text or interactive message: **SUB WIN3-L your_full_name**

where **your_full_name** is your name. For example: SUB WIN3-L Bill Gates

OS2 on LISTSERV@BLEKUL11 or LISTSERV@cc1.kuleuven.ac.be (OS2@BLEKUL11)

Moderator: OS2MOD@cc1.kuleuven.ac.be (OS2MOD@BLEKUL11)

The OS2 list was formed to provide a forum for discussions of the operating systems OS/2 for IBM Compatible PCs. Possible discussion topics include but are not limited to: The base operating system in all its flavors and versions; Hardware configurations and possible conflicts; Use with software packages, existing OS/2 software; Communications: LAN, SNA, ASYNC, TCP/IP, etc.; Database Manager and other SQL Servers; Device drivers.

OS2 is a weekly digest, called the OS/2 Discussion Forum, with roughly 1000 lines of Q&A each week, including articles picked up at the various comp.os.os2.* news groups on USEnet. OS/2 had up to now 700+ direct subscriptions, besides several redistribution points and NETNEWS gateways. OS2 always was a moderated list with archives. Archives of OS2 (before called OS-2), even the older ones (before today) with the old OS-2 name, will be stored in the OS2 FILELIST. To receive a list of files send the command **INDEX OS2** to LISTSERV@cc1.kuleuven.ac.be a.k.a. LISTSERV@BLEKUL11 (a LISTEARN file distribution vm machine)

To subscribe to OS2, send the following command to LISTSERV@BLEKUL11 or LISTSERV@cc1.kuleuven.ac.be via mail text or interactive message: **SUBSCRIBE OS2 Your_full_name** where "Your_full_name" is your name. For example: SUBSCRIBE OS2 Bill Gates

XPRT@ATHENA.MIT.EDU

Coordinator: Keith Packard (keith@ATHENA.MIT.EDU) (keith@EXPO.LCS.MIT.EDU) (keith@EXPO" @XX.LCS.MIT.EDU)

Mailing list for general discussion on the X window system, software running under X, and the like. Also see X-ADA, X11-3D, XIMAGE, XVIDEO. All requests to be added to or deleted from this list, problems, questions, etc., should be sent to XPRT-REQUEST@ATHENA.MIT.EDU. X Consortium staff: (LISTS-REQUEST@EXPO.LCS.MIT.EDU) (LISTS-REQUEST@EXPO" @XX.LCS.MIT.EDU) ■

Groups continued from page 8.

There are also the various computer systems hierarchies, including those for...

the Amiga:

- comp.sys.amiga.announce
- comp.sys.amiga.audio
- comp.sys.amiga.emulations
- comp.sys.amiga.graphics
- comp.sys.amiga.introduction
- comp.sys.amiga.misc
- comp.sys.amiga.programmer
- comp.sys.amiga.tech
- comp.sys.amiga.applications
- comp.sys.amiga.datacomm
- comp.sys.amiga.games
- comp.sys.amiga.hardware
- comp.sys.amiga.marketplace
- comp.sys.amiga.multimedia
- comp.sys.amiga.reviews

the Macintosh:

- comp.sys.mac
- comp.sys.mac.apps
- comp.sys.mac.databases
- comp.sys.mac.games
- comp.sys.mac.hypercard
- comp.sys.mac.programmer
- comp.sys.mac.wanted
- comp.sys.mac.announce
- comp.sys.mac.comm
- comp.sys.mac.digest
- comp.sys.mac.hardware
- comp.sys.mac.misc
- comp.sys.mac.system

The NeXT:

- comp.sys.next
- comp.sys.next.misc
- comp.sys.next.sysadmin
- comp.sys.next.announce
- comp.sys.next.programmer

Sun Workstations:

- comp.sys.sun
- comp.sys.sun.announce
- comp.sys.sun.hardware
- comp.sys.sun.wanted
- comp.sys.sun.admin
- comp.sys.sun.apps
- comp.sys.sun.misc

... as well as many other systems.

As you can see, the number and diversity of discussion groups is quite extensive. These news groups are, however, a good start in picking up hints and tips on a computing or windowing system that you might be employing. Remember that you can also post questions to all of the above lists or news groups, and most of them are glad to field questions by a novice or someone who is seeking advice in relation to a particular computing platform.■

X continued from page 8.

Products

You have one of several options to get X on your desk: a workstation, an X terminal, or X software for your micro-computer. A UNIX or VMS workstation is by far the most expensive and most powerful way to run X. It also requires someone to manage the machine on a regular basis. Workstations start at about \$5,000. An X terminal ranges in price from about \$1,000 to \$5,000. They vary greatly in performance and capabilities. Finally, many different brands of X software exist for the PC and Macintosh. Academic Computing Services (ACS) has tested a few of the PC packages. All of them had very poor performance even on a 386 with 4MBs of RAM and a Super VGA display system. Additionally, the needed software costs about \$700 to \$1,000 on top of the hefty hardware requirements. On the Macintosh, MacX seems to perform slightly better than the PC products, but has very low resolution. Also, though not required by the software, a three button mouse is necessary for usability. On a positive note, MacX only costs about \$200. If you are considering purchasing a workstation, X terminal or X software, please feel free to contact ACS (817-565-2324, ISB 119) and our experienced workstation and X consultants can help you select the best X product for your applications.

One common misunderstanding about X is that people compare it to Macintosh or a PC running MS Windows. A Macintosh includes what is known as a desktop and MS Windows includes a partial implementation of a desktop. A desktop is a graphical simulation of a person's desk with accompanying file cabinet and trash can where the screen primarily represents the surface of a desk and icons are present to indicate the trash can and file cabinet functions. Unfortunately, most X software implementations do not come with any sort

Graphical User Interfaces

of desktop. Sun's OpenWindows has come a long way towards a desktop system with their new 3.0 release. X Desktops can be purchased, but are not cheap. ACS has product information on these software packages, but at this time, we do not support one.

Due to the lack of desktops and other features, X is not considered to be a very simple to use system. X does have a considerable learning curve, especially if you have custom applications. X can provide increased UNIX productivity to the knowledgeable X user and that is its main benefit.

The Future

In the next few weeks, three X terminals will be installed in the ACS General Access Lab in ISB 110. In addition, a handful of departments are using X equipment at the current time.

Several applications on the Solbourne system work best with X. The two most widely used are SAS and Mathematica. Though SAS runs in a VT100 environment also, it is vastly easier to use under X. In the X environment, SAS Assist is a wonderful tool which allows the novice SAS user to perform complex statistical work without knowing the SAS programming language. Mathematica

runs just fine in VT100 mode if you just need numeric answers to your problems. However, the most impressive feature of Mathematica is its graphics capability and if you are using the UNIX version of Mathematica, those only function under X.

Over the next few years, we expect to see a dramatic increase in the number of X devices available on the network and increased usage of them. The growth of X in the marketplace is closely tied to the growth of UNIX. In UNT's case, the growth of UNIX as well as the growth in the number of applications that take advantage of X will be factors in the growth of X Window around this campus. ■

General Information

Change in Telephone Support Procedures

By Dr. Philip Baczewski, Acting Director of Academic Computing (BITNET: AC12@UNTVM1)

Help Desk Phase Out

Beginning on March 1, the (817) 565-4050 telephone number, which was previously the Computing Center Help Desk, will no longer be in service. In place of the Help Desk number, you can contact Academic Computing Services (817-565-2324) directly for help on any of the supported central host systems or wide-area networks. Students wishing to contact the ACS General Access Lab (ISB 110) can dial (817) 565-3048. You can also contact Network and Microcomputer Services (817-565-2316) for help with microcomputer and/or network problems.

After Hours Telephone Support

Network and Microcomputer Services (817-565-2316) has extended their support hours for people having problems with supported microcomputer applications, dial-in lines, and general network and microcomputer problems. The new hours are:

Monday - Thursday	7:00 a.m. - 10:00 p.m.
Friday	7:00 a.m. - 5:00 p.m.
Saturday	8:00 a.m. - 5:00 p.m.
Sunday	1:00 p.m. - 10:00 p.m. ■

WP50-L@UBVM Renamed

The BITNET WordPerfect discussion list, WP50-L, has been renamed to **WPCORP-L@UBVM**. On Usenet, bit.listserv.wp50-l has been removed and bit.listserv.wpcorp-l created. ■

Correction

The Internet address of David Caulkins, GlasNet USA — the first non-profit, non-governmental network in what was once the Soviet Union, published in the November/December 1991 issue of *Benchmarks* was incorrect. His correct address is: **dcaulkins@igc.org** ■

General Information

General Access Lab Spring Break Hours

Location	Dates	Times
ACS Lab (ISB 110)	March 13-14	Regular Hours
	March 15	CLOSED
	March 16-20	Noon - 8 p.m.
	March 21	CLOSED
	March 22	Regular Hours
College of Business (All labs)	March 13	8 a.m. - 4 p.m.
	March 14-19	CLOSED
	March 20-21	8 a.m. - 8 p.m.
	March 22	Noon - 11:45 p.m.
Chilton Hall Labs (225, 116)	March 13	Close at 3 p.m.
	March 14-22	CLOSED
Willis Library	March 13-14	Regular Hours
	March 15-21	8 a.m. - 8 p.m.
	March 22	Regular Hours
GAB Labs	Hours not available at publication time. ■	



Information Resources Council News

Minutes provided by Sue Harrison, Recording Secretary

Information Resources Council Members: Philip Baczewski, Computing Center (ex-officio); Dave Barker, TCOM - Physiology; Bill Buntain, Computing Center (ex-officio); Cengiz Capan, College of Business; Carolyn Cunningham, Financial Aid; Jim Curry, Micro Maintenance (ex-officio); Stephen Farish, College of Music; Paul Fisher, Computer Sciences; Frank Forney, TCOM - Academic Computing; Chuck Fuller, Business Services; Don Grose, UNT Libraries; Richard Harris, Computing Center (ex-officio); Tom Newell, Telecommunications; Don Palermo, Admissions; Sue Pierce, School of Community Services; Paul Schlieve, Computer Education & Cognitive Systems; John Todd, Political Science; Ray Vondran, Library and Information Science (Chair); Sue Harrison, Computing Center (Recording Secretary).

Tuesday, January 21, 1992

It was agreed that the official name of the General Access Lab Committee would be just that, instead of General Access Laboratories Policies and Account Holders Committee.

Richard Harris recommended that the Computing Center staff and services not be moved to a renovated QUAD II building. Since the issue of moving the Computing

Center is still in question he asked for input from the IRC, since all are Computing Services users. After some discussion, a motion was passed that the IRC make a recommendation to the Facilities Committee which would express the consensus of the IRC. The recommendation was stated as follows:

It would be of great advantage to the university community to retain the physical location of computing center personnel and resources in its centralized locations. Where expansion of space for centralized computing is needed, there are great potential productivity gains in expanding computing space allocations in centralized rather than in alternate locations.

Cengiz Capan reported that the General Access Laboratories Committee has met and are working on the operations policy and procedures. They expect to have a final document to present to the IRC at its next meeting. Since one of the Committee's jobs is to monitor expenditures and budget needs, they plan to have a meeting of account holders to assess their future budgetary needs as well as look at their expenditures during this Fiscal Year to date. He reported that all of the labs are operational and distributed a General Access Labs informational brochure which is available in all of the labs. The Committee will be looking at future "special needs" for faculty.

In response to a question regarding allocation of Computer Use fees, there was some general discussion regarding how the allocations were made. Dr. Vondran explained that the fee was initially established at \$2.00 per semester credit hour to defray the costs of maintaining and developing new computing services to students. About half of fund (about \$600,000/year) was allocated to partially support computing services such as teleregistration. The remainder was allocated to general access microcomputer labs. The fee was increased to \$3.25, primarily to provide increased support for general

access labs. Labs funded from this fee must be open to all students.

In addition, Capan stated that his committee has given their approval to Jim Curry to support Apple Computers. They are also pursuing the idea of the Microcomputer Maintenance Shop supporting laser printers, as well. The overriding issue in Jim Curry taking on these new items is lack of space for his shop. Dr. Vondran stated that he would bring up the issue of space needs for the Microcomputer Maintenance Shop at the next IRC Steering Committee meeting.

Dr. Vondran remarked that there has been a favorable response to the High Speed Network Planning Committee's report, which was presented to the IRC for approval. After discussion, the IRC approved the report and agreed that the 20 buildings proposed for wiring should be completed by the end of Fiscal Year 1993.

Paul Schlieve remarked that this is a vast increase in the telecommunications infrastructure, without any appreciable increase in numbers of staff to support it. He further stated that if the project were to be done internally it would require an increase of 5 to 10 FTE to accomplish it. Buntain pointed out that the accelerated schedule for the building wiring project would reduce the need for additional staff from the number Paul Schlieve requested. He requested 1.0 additional FTE for making older technologies, which would demand a lot of support, observation, and training.

Sue Pierce reported that the Faculty Standards Committee is sending Pegasus Mail to the Support Computing Items List and that her committee is looking into menuing to enable users to access the various resources more easily. They are also investigating various graphical user interfaces as well as the possibility of the Microcomputer Maintenance Shop supporting high capacity tape drives. Her committee recommends the publication of a list of University Committees in *Benchmarks* so that the university community will know who to contact regarding certain issues. ■

Instructional Videos Available in the Media Library

By Cynthia Koepp, Benchmarks Assistant Editor (BITNET: AC03@UNTVM1)

The media library's holdings include items (mostly videorecordings) of possible interest to computer users. Although the materials listed in the mediagraphy are fairly recent, rapid technological changes make much of the collection suitable for general, or even historical, information. (They are not "how-to" videos. I watched a videotape titled: "Problem Solving and Program Design; Programming Languages." I learned, but my computer background is very limited.)

Materials from the library cannot be checked out by students, but your student ID allows you to use the materials on the premises. Faculty members can check out materials with a one-day notice. While their computer science collection does not appear very strong, they *do* have many interesting items, especially in the humanities.

The Media Library is located at 111 Chilton Hall. The spring hours are:

Mon.—Thurs. 7:45 a.m.—10:00 p.m.
Fri. 7:45 a.m.—6:00 p.m.
Sat. 10:00 a.m.—5:00 p.m.
Sun. 1:00 p.m.—10:00 p.m. ■

Media Library Broadcasts Apple Education TV Series

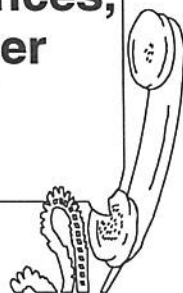
By Claudia Lynch, Benchmarks Editor (BITNET: AS04@UNTVM1)

The 1992 Apple Education Television Series, "Imagine," is being broadcast by the Media Library throughout the spring semester. Each seminar, as the broadcasts are called, will be shown from noon to 1 p.m. and can be viewed in the Media Library, Chilton Hall 111 or by tuning in to channel 11 on a television connected to the campus broadband. Following is the broadcast schedule for the remainder of the semester.

- **February 20** — "How Computers Are Changing the Way We Learn." This program will explore the impact technology is making in the educational arena.
- **April 16** — "Multimedia in Language and Literacy." This program illustrates the use of Macintosh computers to combine sound, graphics and video to help people learn new languages and enhance their reading and writing skills..
- **May 21** — "Client/Server Architecture and Information Access Analysis." This program presents the integration of Macintosh computers with a wide variety of host databases, applications and computer platforms on several college campuses.

Viewers can call in after each program with questions or comments. For information about the series, contact Academic Computing Services (565-2324) or the Media Library (565-2480). ■

Calls For Papers, Conferences, And Other Items of Interest



13045.

Grants, Internships, Fellowships

- ❑ **NASA Space Grant internship, Oregon St. University, June 15- August 14, 1992** — Undergraduate students have opportunities for research in atmospheric science; chemical, electrical, computer, mechanical, or nuclear engineering; computer science, and oceanography. Deadline for applying is **March 18**. For more information contact: Dr. Robert Reynolds, Space Grant Summer Intern Program c/o Sue Pullen College of Oceanography, Oregon St. University, Oceanography, Administration Building 104, Corvallis, Oregon 97331-5503.
- ❑ **Fellowship in Medical Informatics, Columbia University Center for Medical Informatics, New York City** — People with an M.D., Ph.D. or equivalent training can apply for a fellowship to train in medical informatics. This program includes tuition support for 34 credits of course work in medical informatics, computer science, evaluation study design, and biostatistics. Educational programs will be individualized to address the needs and directions of each fellow. Opportunities exist for a joint master's degree in Medical Informatics and Computer Science. Deadline for applications for fellowships starting in July 1992 is **April 1**. Application for materials: Steven Shea, M.D., Atchley Pavilion 1310, 161 Ft. Washington Ave., New York, NY 10032. Internet: sheaste@cucis.cis.columbia.edu Phone: 212-305-5334.
- ❑ **Computer Equipment Grants for projects that incorporate advanced uses of computer technology to address critical environmental issues** — Nonprofit organizations, colleges and universities can apply to EarthGrants, Apple Computer Inc., Community Affairs Dept., 10525 Mariani Ave., M/S 38J, Cupertino, CA 95014 (408) 974-2974.

Conference

- ❑ **INFORMA 1992, Hilton Head Island, South Carolina, May 10-12, 1992** — Library directors, library automation specialists, and directors of information/education technology and computing centers are invited to attend this conference focusing on Campus-Wide Information Systems. Further information can be obtained from Internet: jdamian@beach.csulb.edu FAX: 310-985-1703.
- ❑ **International Computer Virus Prevention Conference and Exhibition, June 18-19, 1992, Hyatt Regency, Crystal City, VA.** — The purpose of this conference is to provide a forum for anti-virus product developers, researchers, and academicians to exchange information among themselves and the public. For more information, contact NCSA/ICVP '92, Attn: Mr. Paul Gates, 227 W. Main St., Mechanicsburg, PA 17055 Phone: 717-258-1816 FAX: 717-243-8642. ■

We have received the following "calls" and announcements from various organizations.

Call for Papers

- ❑ **Modern Language Association's Discussion Group on Computer Studies in Language and Literature, MLA Convention, New York City, December 27-30, 1992** — MLA members can present papers on "How the Computer has improved literary research: Case Studies." Deadline for abstracts is **March 20**. Contact: Professor Robert Ponterio, Dept. of French, N.Y. S.U.C., Cortland, NY



BENCHMARKS FORUM

*BENCHMARKS FORUM is intended to serve as a vehicle for answering questions that may be of general interest to the user community. If you have a question, please send electronic mail to the **Benchmarks** editor (AS04@UNTVM1) or write it down and drop it by the Computing Center. We will try to answer it in the next issue.*

Question: *I am interested in using the Dialog Knowledge Index Service that was announced in the October 1991 Benchmarks (pg. 3). I would like to access it via telnet, however. Is that possible?*

Answer: Yes, Dialog is accessible via telnet. The charges, of course, are still applicable, and you must have a valid account in order to use the databases. If you have Internet access, type the following:

telnet dialog.com

For more information about Dialog, as mentioned in the article, call (800) 334-2564. ■

Latest Version of IMSL Library Installed on HDS, Solbourne

By George Morrow, ACS Mainframe User Services (BITNET: AS01@UNTVM1)

The latest version (2.0) of the International Math and Statistical Library (IMSL) has been installed on both the HDS/8083 (IBM-compatible mainframe, MVS operating system) and Solbourne systems. This latest release of FORTRAN subroutines and functions is useful in research involving mathematical and statistical analysis. Version 2.0 replaces Version 1.1 and contains approximately 160 new routines. With this release, the MATH/LIBRARY and SFUN/LIBRARY have been combined into one library, but the documentation remains separate.

Math Library

The Math library contains routines for analysis in Linear Systems, Eigensystem Analysis, Interpolation and Approximation, Integration and Differentiation, Differential Equations, Transforms, Nonlinear Equations, Optimization, Basic Matrix/Vector Operations, and Utilities.

The Special Functions section of the Math library contains routines on Elementary Functions, Trigonometric and Hyperbolic Functions, Exponential Integrals and Related Functions, Gamma Functions, Error and Related Functions, Bessel Functions, Kelvin Functions, Airy Functions, Elliptic Integrals, Elliptic and Related Functions, Probability Distribution Functions, and Mathieu and Miscellaneous Functions.

Stat Library

The Stat library contains routines for Basic Statistics, Regression, Correlation, Analysis of Variance, Categorical and Discrete Data Analysis, Nonparametric Statistics, Tests of Goodness of Fit and Randomness, Time Series Analysis and Forecasting, Covariance Structures and Factor Analysis, Discriminant Analysis, Cluster Analysis, Sampling, Survival Analysis, Life Testing and Reliability, Multidimensional Scaling, Density and Hazard Estimation, Line Printer Graphics, Probability Distribution Function and Inverses, Random Number Generation, and Utilities.

Example

Following is an example of an OS/MVS FORTRAN run in which an IMSL routine is called (ZBREN in this example).

```
//IDnnIMSL JOB (IDnn,1,3),MORROW,PASSWORD=SECRET
// EXEC VSFT2CLG
//FORT.SYSIN DD *
      INTEGER MAXFN, NSIG, IER
      DOUBLE PRECISION F, EPS, A, B
      EXTERNAL F
      A=-10.0
      B = 0.0
      EPS = 0.0
      NSIG = 3
      MAXFN = 100
      CALL ZBREN(F,EPS,NSIG,A,B,MAXFN,IER)
      WRITE (6,99999) B, MAXFN
99999 FORMAT (' THE BEST APPROXIMATION TO THE ZERO OF F
IS EQUAL TO',
& F5.1, ' ', '/', ' THE NUMBER OF FUNCTION EVALUATIONS',
& ' REQUIRED WAS ', I2, ' ', '/', /)
      END
      REAL FUNCTION F (X)
      REAL X
      F = X**2 + X - 2.0
      RETURN
      END
```

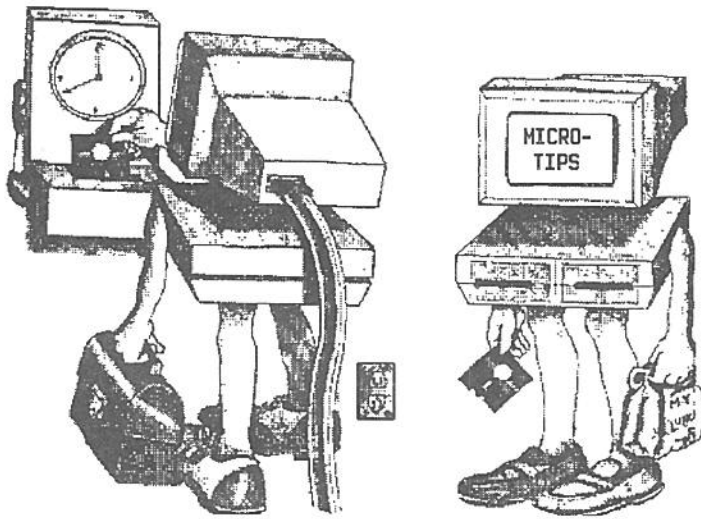
If you encounter any problems using the IMSL libraries, contact George Morrow in Academic Computing Services, ISB 119 (565-2324). ■

Computing Center Staff Activities

By Claudia Lynch, Benchmarks Editor (BITNET: AS04@UNTVM1)

Presentation

C.R. Chevli, Data Communication Analyst and Computer Sciences doctoral student, presented a paper at the Third IEEE Symposium on Parallel and Distributed Processing December 2-5, 1991 in Dallas. The paper, titled "Performance Enhancement of Multistage Interconnection Network with Nonuniform Traffic," was co-authored with Dr. H.Y. Youn of the University of Texas at Austin. ■



This column is intended to serve as a forum for sharing useful tips on making more productive use of microcomputers. If you have a tip that you feel may be of use to campus users, submit it to the **Benchmarks** Editor for possible inclusion in a future issue.

Software Piracy

By Wendy Alexander (wendy_alexander@mtsa.ubc.ca), Teresa Tenisci (teresa_tenisci@mtsa.ubc.ca) University Computing Services, the University of British Columbia

This is an edited version of an article that appeared in the University of British Columbia University Computing Services' newsletter *Campus Computing* (January 1992, Vol. 7, No. 1).

The University of Oregon Continuation Center settled a copyright lawsuit with the Software Publishers Association to pay \$130,000 as well as organize and host a national conference on copyright law and software use. This was the first software copyright suit brought against a higher education institution. The federal suit was filed against the school in February 1990 on behalf of several software vendors, including Lotus Development Corp., Microsoft Corp. and WordPerfect Corp. The suit alleged that the center employees made unauthorized copies of the software companies' program and training manuals.

— Ledger, Association of College and University Auditors, Nov. 1991

When we speak of pirates in today's world, two different visions come to mind. The first is of a latter-day swashbuckling ruffian who captured cargo ships and stole the riches and wealth aboard for himself. The second is of a person who copies software from a source to their own PC, without purchasing it from a legal vendor. We may see both as underdogs, fighting the injustice of "the system,"

while remaining worthy at heart, and therefore somehow admirable. No wonder software piracy is not viewed as a crime by most people.

In fact, software piracy is a crime. It is theft.

When a software package is purchased from a legal vendor, a contract exists between the vendor and the purchaser. This contract, called a license, can be found in various places: in the instruction manuals, other documentation, or on the disk itself. Most people believe that once they have purchased software, they own it. This is not quite true. In fact, what has been purchased is the license which allows the purchaser to use the product. The software company still owns the software. This lack of understanding often leads to breaches of the contract through software piracy, and in many cases the culprits are not even aware of the illegalities of their actions. Sometimes, just breaking the seal of a disk package constitutes a legal and binding acceptance of the license's conditions.

Don't make UNT the target of the next search warrant. The embarrassment that would be caused by a lawsuit would be damaging to the reputation of the University, and the fines can be very expensive. Don't be fooled into thinking that only the University will be liable and have to pay. Depending on policies in place within your department, you too, might be liable.

What follows are some common situations that will test your knowledge of what is legal and what is not when it comes to software duplication.

- **Situation #1:** A software program has been purchased by an office for one of its employees. Other employees in the same office hear of the program and discover that it would be a great help to them in their work. Can legal copies be made?

Answer: No, legal copies cannot be made. Many people make this mistake, believing that as long as the program is for company business,

the use of it within the workplace is legal. Most license agreements require that each machine or workstation that uses the program must have a *purchased* copy of that program.

- **Situation #2:** A computer which "belonged" to the employee you are replacing is now yours. All sorts of wonderful programs are on it and you assume they are legal copies. If you are audited and are found to have illegal software on your machine, are you responsible?

Answer: You may be responsible, depending on policies within your department. Just because somebody else put the software on the machine doesn't mean you are blameless. Essentially, you turned a blind eye and benefited from the existence of the software on the machine. Ways to determine whether or not your software is legal are: check to see if official documentation exists for your machine; check to see if there are any official diskettes for the program; check for official templates on your computer keyboard. If none of these three exists, be prepared to find out that the software is illegal. You may want to speak with the person in your department who keeps track of purchasing software for more information on the programs installed on your machine.

- **Situation #3:** The office operates on a network. Since one person has a legal copy of a software program, and has installed it on the network, everyone is allowed to use it. True or False?

Answer: Either answer may be correct, depending on what the software license says. Some licenses are strict and insist that every person who uses a program, whether it be on a network or not, must purchase the program. Some software companies sell site licenses, and these allow everyone on the network to use the program without purchasing copies for each individual who will use it.

- **Situation #4:** An update for your spreadsheet program arrives. Your co-worker has been asking you for a copy of the program, but you know that it is illegal so you refused. But now that the new version has arrived, and you have no need for the old version, can you give it to your co-worker?

Answer: No. Updates are defined as enhancements to the original package that you purchased. Once the package has been updated, the old package should be destroyed or used solely as a backup.

- **Situation #5:** You have a big presentation to give tomorrow and, as five o'clock rolls around, you realize that you have to be home to baby-sit your children. Once the kids are settled in bed, can you use the software from the office on your home machine?

Answer: Maybe. Again, it depends on what the software license says. Some licenses say that software can be used both at home and at the office. Some say that the program can be used on several machines, provided that no two are running at the same time. Some programs are very restrictive, and say that the program can only be used on one machine. If you don't have access to the license, or if you find it ambiguous or unclear, make sure you check with someone such as a technical support person, about the details before you copy anything.

If you find yourself in a situation like this and don't know the answer, someone else does. The Software Publishers Association operates a toll-free hotline number through which you can access information about how to order an anti-piracy video, or a self-audit kit, or just get some anti-piracy information. The number is: 1-800-388-7478.

You can also contact Network and Microcomputer Services in the Computing Center here at UNT (565-2316) if you have questions about site licensed and other software products. ■



Virus Update

Compiled by Claudia Lynch, *Benchmarks*
Editor (BITNET: AS04@UNTVM1)

- F-PROT 2.02 has been uploaded to the VAX BBS. It can be found stored as FPROT202.zip in the files section. F-PROT 2.02D will be placed there in the very near future.
- A new virus called Michelangelo is due to wreak havoc on March 6, Michelangelo's birthday. Many of the newer anti-viral programs (since fall 1991), including F-PROT, will detect and remove the virus.
- National Computer Security Association (NCSA) now has an open virus forum on Compuserve. Type GO NCSA, after connecting to Compuserve, for free help in identifying and removing infections of any sort. Contact Bob Bales at 717-258-1816 for more information.
- The Antivirus Methods Congress (AMC) is a US-based world organization uniting users, researchers and vendors in the effort to retard and eventually minimize the onslaught of malicious code. Anyone interested in joining should contact Yvo Desmedt (amc@well.sf.cau.us). ■

WordPerfect Users Group Schedule: Spring 1992

Monthly meetings of the WordPerfect Users Group continue in Marquis Hall, Room 105. All meetings are from 2-3 p.m.

- **February 21:** Creative Headers/Footers and Page Numbering
- **March 13:** Macro Magic
- **April 10:** Working with Tables
- **May 15:** Graphics How-Tos ■

VAXCLUSTER USAGE STATISTICS

January Top Ten Programs: CPU Time Used

Program	Description	CPU Time	Percent of Total
1. User programs	Compiled Programs	14 03:31:46.50	61.6
2. DEFRAG	Disk Optimizer	2 08:17:20.04	10.2
3. GAUSSIAN	Molecular Modelling	1 14:03:25.91	6.9
4. NEWS	ANU News Utility	1 09:58:34.44	6.2
5. LOGINOUT	User Login	0 14:16:48.26	2.6
6. BACKUP	Disk Backups	0 09:35:57.01	1.7
7. MAIL_SERVER	VMS Mail Server	0 09:04:22.64	1.6
8. MAIL	VMS Mail	0 06:51:31.37	1.2
9. IRC	Internet Relay Chat	0 05:35:12.97	1.0
10. XYZZY	Chat Utility	0 04:11:31.25	0.8
Total		22 23:10:33.30	

January Top Ten Programs: Frequency of Runs

Program	Description	Number of Runs	Percent of Total
1. LOGINOUT	User login	271283	42.9
2. SET	VMS Utility	112729	17.8
3. DIRECTORY	VMS Utility	44770	7.1
4. DELETE	VMS Utility	38103	6.0
5. User programs	Compiled Programs	27295	4.3
6. MAIL_SERVER	VMS Mail Server	19415	3.1
7. SYSLOGIN	User Login	14867	2.3
8. MAIL	VMS Mail Utility	12902	2.0
9. SEND	BITNET message Utility	11626	1.8
10. TYPE	VMS Utility	8803	1.4
Total		632908	

- ④ from your microcomputer running X that may or may not have its own "window manager."

Many of the terms you know from dealing with Microsoft Windows, Macintosh Finder, Amiga Intuition, or OS/2 Presentation Manager translate well to the X Window environment. Some X specific terminology:

- **Window Manager:** an X client which keeps track of which windows are currently open on your X display and what window is currently active. Similar to OS/2's "Presentation Manager."
- **Active Window:** the window that is currently "attached" to the keyboard. Also referred to as the window the server and user are "focused" a.k.a. "keyboard focus."
- **X Display:** the screen or monitor on which your X server is displaying the client's windows.
- **On-Board Window Manager:** a window manager client that runs in the X terminal and needs no other host system on which to run. This is desirable because it reduces the already considerable load that X clients can place on a host system and network.
- **xterm:** X client software that simulates a VT100 terminal in an X window.
- **shell-tool:** XView client software (on Suns) which invokes a local `csh` or `sh` window on the workstation.

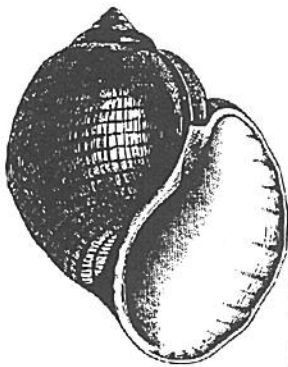
If you are running X from a workstation, chances are good that you'll already have your own "window manager" that you want to use and that you just want to run some applications, like SAS, on the Solbourne. There are two basic ways to do this:

Please see X on page 19.

Using X on Sol

The X Window System (X) software on Sol is accessible in a variety of ways. The way you choose will primarily depend upon the X display system you are running. You can access X software on Sol:

- ① from your personal workstation already running X.
- ② from an X terminal running an "on-board window manager."
- ③ from an X terminal and use Sol's "window manager" program, `swm`.



The UNIX Shell

By Marc St.-Gil, UNIX Systems Programmer (mstgil@sol.acs.unt.edu)

VAX/UNIX NEWS

VAX News

- **Archie client upgraded** — The archie client has been upgraded to an official release.
- **HYTELNET 5.0 installed** — The HYTELNET package has been upgraded to version 5.0. This includes many new Internet accessible services. In addition, this version will automatically make TELNET connections for you.

UNIX News

- **Solbourne Upgrades** — 2 additional processor cards, an additional 128 MB RAM card, and a 5 GB 8mm tape drive were installed on 2/12/92. This is part of a series of ongoing upgrades planned for this semester which will culminate with the addition of 4.8 GB of disk storage expected to arrive late this month and become available in early March.
- **HYTELNET 5.0 installed** — A new version of the HYTELNET program has been installed. This version (5.0) will automatically connect you to the remote site, and includes information on many new Internet accessible services.
- **BITNET Mail Addresses Change** — All mail directed to BITNET sites may now be sent to user@host.bitnet. The mail transport system will now automatically route your mail through the Internet to BITNET gateway maintained through the generous auspices of Rice University.
- **MIT Scheme Installed** — MIT Scheme 6.1.2 has been installed. To invoke the full interpreter, enter **scheme** at the shell prompt. A smaller interpreter designed to be compatible with the text

SOLBOURNE USAGE STATISTICS

January Top Ten Programs: CPU Time Used

Program	Description	CPU Minutes	Percent of Total
1. g90	Gaussian 90	38313.2	56.1
2. int	User Program	5486.2	8.0
3. sas	Statistical Package	3294.6	4.8
4. tests	Comparison	2203.7	3.2
5. lag04	User Program	2109.1	3.1
6. perl	Perl language Interpreter	1296.4	1.9
7. fig5b	User Program	1207.8	1.8
8. fig3b	User Program	1189.8	1.7
9. ai2	User Program	982.6	1.4
10. fig10b	User Program	964.9	1.4
Total		57048.3	

January Top Ten Programs: Run Time Used

Program	Description	Number of Runs	Percent of Total
1. snmpget	User Program	188232	12.7
2. sh	Bourne Shell	182246	5.4
3. ls	Directory	80630	5.4
4. egrep	File Search Utility	73919	5.0
5. tr	User Program	64883	4.4
6. sort	File Sorting Utility	64770	4.4
7. tail	User Program	61472	4.1
8. expr	Expression Evaluator	60439	4.1
9. csh	C Shell	47208	3.2
10. is_able	Permissions Checker	46489	3.1
Total		870188	

Structure and Interpretation of Computer Programs is available by entering the command **sicp**. The full interpreter, scheme, is very similar to TI PC Scheme, however there are a few differences. A .scheme.init initialization file has been prepared to help lessen some of these differences. Individuals interested in this file may send inquiries to operator. Additional information is available by entering the command, **man scheme**. ■

X continued from page 18.

- ① You can telnet from an xterm/shell-tool window into the Solbourne, log in, set the DISPLAY environment variable to point to your computer and execute the application by hand.
- ② You can set up your Solbourne account for rlogin use, and issue an **rsh** or **rexec** command on your system to bypass the login and password procedures on Sol and execute your desired program. **Note: This is very insecure** — you must allow anyone

who can gain access to your account on your workstation, or can simulate it, free access to your account on Sol.

If you are running X from an X terminal, then you will want to set up a file named `.xsession` and a file named `.Xresources` in your home directory on Sol. The `.Xresources` file is where you specify any customizations you would like to make to the way X or a specific application works. The `.xsession` file is a mini shell script that is simply a list of the clients you wish to start up each time you use X on Sol. The commands should be listed in the file just as you would have to type them on the command line. All but the last command should be run in the background. If you are not running an on-board window manager then you will likely want this last command to be the one that starts up your window manager of choice. If you are running an on-board window manager then you are likely running your start-up script by hand from a telnet client and will want the last command in your `.xsession` file to run in the background as well. This will enable you to continue using the telnet client or exit it at your convenience.

Running X from your PC is generally like running X from an X terminal except that you have to do more than just power up the machine to get the X server started. You generally need to load some sort of TCP/IP transport software and then start the X emulator. On a Macintosh, simply start up MacX with a double click on the appropriate icon and then proceed as if you were on an X terminal with an on-board window manager. Running another window manager from the Solbourne is not supported since MacX provides an integral server.

Demonstration X startup files and installation notes for MacX, and X terminals can be found in the directory `/usr/local/Xproto` on Sol. Installation and usage consulting is provided from 8 am to 5 pm by the Academic Computing Services (ACS) Staff — ISB 119, 817-565-2324. ■

Netware VMS Problems Lead to Change in Procedure

By Billy Barron, VAX/UNIX System Manager (BITNET: BILLY@UNTVAX)

Due to numerous, on-going problems, the policy of automatically assigning Netware VMS accounts with VAX accounts will be ended. Anyone who would like a Netware VMS account should contact Academic Computing Services with the request (565-2324). We will be glad to generate the accounts on a case-by-case basis.

The future of Netware VMS at UNT is questionable for several reasons:

- ❶ It does not work with the next version of the VAX VMS operating system.
- ❷ Novell is no longer supporting it.
- ❸ Serious technical problems continue to occur.

Please note that none of this has any effect on normal VAX/VMS accounts.

If you have questions or want further information, contact Academic Computing Services, ISB 119 (565-2324). ■

UNIX Support Hotline Gaffes

The following was posted to rec.humor.funny by an anonymous group from an anonymous organization.

- Sometimes the receptionist mangles UNIX in a funny way:
 - "Previous shelves have been filled. Processes are dangling."
 - "Trying to get a back door booth"
 - "Problem with supper block"
 - "Questions on the fuzzy disk controller"
 - "Problem with the getty desk"
- Spelling errors can happen:
 - "Question on COBOL air conditions"
 - "Problem with defunk processor"
 - "Mothly backup roots petition needs to verify"
- Sometimes there is strange imagery involved. Picture this:
 - "System running in two time zones"
 - "Error log file that self purges"
 - "The program keeps changing"
 - "Terminal is screaming"
- There is some hardware we just don't support:
 - "Getting rat errors"
 - "Part number for prompt chip"
 - "Put in new version of VCR, has a couple of questions"
- This is clearly NOT a software problem:
 - "Terminal burning up — smelling smoke" ■

MAINFRAME TECHNICAL SERVICES

Mainframe Performance Statistics

Operating Systems Performance Statistics for January

CPU	SYSTEM	Planned Production Hours	Production Hours Achieved	System Uptime
ACAD	VM/XA	744.00	730.43	98.2%
ACAD	MUSIC/SP	722.62	708.12	98.0%
ACAD	MVS/JES2	744.00	725.99	97.6%
ACAD	COMPLETA	735.07	716.68	97.5%
ADMN	MVS/JES2	738.57	737.45	99.8%
ADMN	COMPLETA	325.00	325.00	100.0%
ADMN	ADABASA	707.57	706.13	99.8%

- The ACAD CPU achieved 99.1% uptime in January. The HDS/7360 DASD achieved 100% uptime in January. The HDS/7380 DASD achieved 100% uptime in January.
- The ADMN CPU achieved 100% uptime in January. The HDS/7360 DASD achieved 100% uptime in January. The HDS/7380 DASD achieved 100% uptime in January. The EMC Solid State Disk achieved 100% uptime in January. ■

Key Causes Of Lost Productivity In January: ACAD CPU

MPU, Tape, and Disk Subsystems (HDS)

1. Replacing faulty components in 8083 MPU. 7.64 HOURS
 2. Microcode upgrade in 8083 MPU. 4.59
 3. Component failures in 8083 MPU. 3.21
- TOTAL 15.44 HOURS

Miscellaneous

1. MVS systems software development. 2.95
- GRAND TOTAL 18.39 HOURS

Key Causes Of Lost Productivity In January: ADMN CPU

Miscellaneous

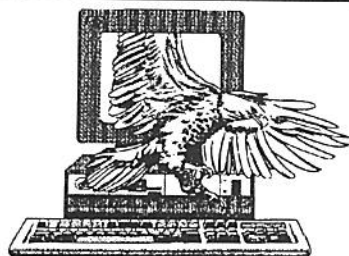
1. MVS/SP systems software development. 7.21 HOURS ■

January Top Ten Programs : Frequency Of Runs

Program	Description	#of Runs	% of Total
1. IEWL	Linkage Editor	3538	14.9
2. PGM=*.DD	Compiled Program	3524	14.8
3. SASLPA	SAS Version 5.18	3110	13.1
4. IGYCRCTL	VS COBOL2 Compiler	2165	9.1
5. IEBGENER	IBM Utility	2145	9.0
6. IKJEFT01	Password Change	1690	7.1
7. SPSS	SPSS Version 4.0	1331	5.6
8. FORTVS	VS FORTRAN	708	3.0
9. ADARUN	ADABAS Utility Module	578	2.4
10. IFOX00	System Assembler	576	2.4

January Top Ten Programs: CPU Seconds Used

Program	Description	CPU Seconds	% of Total
1. PGM=*.DD	Compiled Program	154699	45.8
2. SASLPA	SAS Version 5.18	136424	40.4
3. SPSS	SPSS Version 4.0	13280	3.9
4. SAS370	SAS Version 6.06	7296	2.2
5. COMPLET4	Academic COM-LETE	6210	1.8
6. IGYCRCTL	VS COBOL2 Compiler	5276	1.6
7. ADARUN	ADABAS Utility Module	2797	0.8
8. IEWL	Linkage Editor	1699	0.5
9. SSS4001	Operations Automation	1505	0.4
10. IFOX00	System Assembler	809	0.2



**University
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Claudia Lynch, *Benchmarks* Editor
Cynthia Koepp, *Benchmarks* Assistant Editor

MAINFRAME TECHNICAL SERVICES

Disk Backup Schedules

SYSTEM	BACKUP	DESCRIPTION
Administrative MVS/SP	Daily	Monday - Friday around 7 p.m. (after COM-LETE is shut down) & on Saturday & Sunday if COM-LETE has been up that day.
	Weekly	Full pack dumps taken each Sunday morning.
	Monthly	Full pack dumps taken on the first day of each month.
Academic MVS/SP	Daily	Monday - Sunday during the early hours of the morning.
	Weekly	Full pack dumps taken each Sunday.
	Monthly	Full volume dumps taken on the first day of each month.
MUSIC/SP	Daily	Wednesday - Monday starting at 4 a.m. and lasting about 30 minutes.
	Weekly	Tuesday mornings at 3 a.m., these last about 2 hours.
	Semester	Once a semester, a permanent backup is taken.
VM/XA	VM Weekly	Early every Wednesday morning.
	CMS mini-disks	Daily backup performed early every morning. Weekly backup every Tuesday starting after Midnight.
	Semester	Once a semester, a permanent backup is taken.
VAXcluster	Daily	Incremental backups are performed Monday -Thursday at 6 p.m. Saturday & Sunday at 5 p.m.
	Weekly	Full backups are performed every Friday beginning at 8 a.m. Generally last all day.
	Monthly	A "stand alone" backup is performed monthly. Dates and times are given in the system log-on message.
	Semester	Once a semester, a permanent backup is taken.
Solbourne	Daily	Incremental backups are performed Sunday -Friday at 2 a.m.
	Weekly	Full backups are performed every Saturday at 3:30 p.m.
	Semester	Once a semester, a permanent backup is taken.

A full description of the system backup procedures can be found by typing **HELP BACKUP** on MUSIC or the VAXcluster. ■

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Benchmarks is a vital link between the UNT Computing Center and the users of our facilities. It is important for all users of the computing facilities to maintain a file of these newsletters because they contain materials which will periodically update existing documents as well as information and suggestions on uses of OS/MVS, MUSIC/SP, the VAXcluster, Solbourne, Microcomputers, and other resources available to UNT students and faculty. To facilitate the dispersal of *Benchmarks*, *** **FREE** *** subscriptions are available. To receive yours, send the following information to us either by snail mail (the post office or campus mail), FAX (817) 565-4060, or through electronic mail, to the UserID AS04 on MUSIC, VMS, SOL, or CMS.

Name: _____

Mailing Address: _____

PLEASE GIVE A CAMPUS ADDRESS (NOT BOX) IF POSSIBLE! - It's Cheaper !!



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